



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XB227]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys, Virginia and North Carolina

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of incidental harassment authorization

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Kitty Hawk Wind, LLC (Kitty Hawk Wind) to incidentally harass, by Level B harassment, marine mammals during marine site characterization surveys offshore Virginia and North Carolina.

DATES: The IHA is effective July 15, 2021 through October 31, 2021.

FOR FURTHER INFORMATION CONTACT: Jaclyn Daly, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary

of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

Description of Proposed Activity

Overview

On April 27, 2021, NMFS received an adequate and complete application from Kitty Hawk Wind requesting an IHA authorizing the take, by Level B harassment only, of nine species of marine mammals incidental to marine site characterization surveys, specifically in association with the use of high-resolution geophysical (HRG) survey equipment off North Carolina. We note surveys will also occur off Virginia; however, for reasons described below, take of marine mammals incidental to use of those surveys is not expected to occur. The surveys will support offshore wind development in 40 percent of the lease area (OCS-A 0508) in the northwest corner closest to the North Carolina

shoreline (approximately 198 square kilometers (km²)). Kitty Hawk Wind would use five types of survey equipment; however, as described below, only the Fugro SRP EAH 2D sparker has the potential to harass marine mammals. Exposure to noise from the surveys may cause behavioral changes in marine mammals (*e.g.*, avoidance, increased swim speeds, etc.) rising to the level of take (Level B harassment) as defined under the MMPA. NMFS has issued the requested IHA.

Dates and Duration

Kitty Hawk Wind would commence the survey no earlier than July 15, with the objective of completing the work by September 31, 2021. The surveys would cover approximately 3,300 km of survey trackline over 25 days, not including non-survey days likely needed for weather down time. The IHA would be effective from July 15 through October 31, 2021. Although the survey will likely be completed by September 31, 2021, the additional month long effective period will allow for any unexpected weather delays while still affording protection to select migratory marine mammal species. This schedule is based on 24-hour operations.

Detailed Description of Specific Activity

The purpose of Kitty Hawk Wind's marine site characterization surveys is to support the siting of the proposed wind turbine generators and offshore export cables, providing a more detailed understanding of the seabed and sub-surface conditions in the wind development area (WDA) and export cable corridor.

Kitty Hawk Wind anticipates that during most of the survey only two vessels would be necessary, with one vessel operating nearshore and another operating offshore. However, up to three vessels may operate at any given time with final vessel choices dependent on the final survey design, vessel availability, and survey contractor selection. Concurrently operating vessels would remain at least 1 km apart. The vessels will be capable of maintaining course and a survey speed of approximately 3 knots (5.6 km per

hour (hr)) while transiting survey lines. Surveys will be conducted along track lines spaced 300 m apart, with tie lines perpendicular to the main transect lines also spaced 300 m apart.

Acoustic sources planned for use during HRG survey activities proposed by Kitty Hawk Wind include the following:

- Medium penetration, impulsive sources (*i.e.*, boomers and sparkers) are used to map deeper subsurface stratigraphy. A boomer is a broadband source operating in the 3.5 Hz to 10 kHz frequency range. Sparkers create omnidirectional acoustic pulses from 50 Hz to 4 kHz. These sources are typically towed behind the vessel.

Operation of the following survey equipment types is not expected to present reasonable risk of marine mammal take, and will not be discussed further beyond the brief summaries provided below.

- Non-impulsive, parametric sub-bottom profilers (SBPs) are used for providing high data density in sub-bottom profiles that are typically required for cable routes, very shallow water, and archaeological surveys. These sources generate short, very narrow-beam (1° to 3.5°) signals at high frequencies (generally around 85-100 kHz). The narrow beamwidth significantly reduces the potential that a marine mammal could be exposed to the signal, while the high frequency of operation means that the signal is rapidly attenuated in seawater. These sources are typically deployed on a pole rather than towed behind the vessel.

- Ultra-short baseline (USBL) positioning systems are used to provide high accuracy ranges by measuring the time between the acoustic pulses transmitted by the vessel transceiver and a transponder (or beacon) necessary to produce the acoustic profile. It is a two-component system with a pole-mounted transceiver and one or several transponders mounted on other survey equipment. USBLs are expected to produce extremely small acoustic propagation distances in their typical operating configuration.

- Multibeam echosounders (MBESs) are used to determine water depths and general bottom topography. The proposed MBESs all have operating frequencies >180 kHz and are therefore outside the general hearing range of marine mammals.

Side scan sonars (SSS) are used for seabed sediment classification purposes and to identify natural and man-made acoustic targets on the seafloor. The proposed SSSs all have operating frequencies >180 kHz and are therefore outside the general hearing range of marine mammals. Table 1 identifies representative survey equipment proposed by Kitty Hawk Wind. The make and model of the listed geophysical equipment may vary depending on availability and the final equipment choices will vary depending upon the final survey design, vessel availability, and survey contractor selection. Not all sources within Table 1 have the potential to result in take (for reasons described above); however, for completeness, we have included them here. Based on our assessment, only the Fugro SPR EAH 2D Sparker has the potential to result in the take of marine mammals.

All decibel (dB) levels included in this notice are referenced to 1 micropascal. The root mean square decibel level (dB_{rms}) represents the square root of the average of the pressure of the sound signal over a given duration. The peak dB level (dB_{peak}) represents the range in pressure between zero and the greatest pressure of the signal. Operating frequencies are presented in kilohertz (kHz).

Table 1. Summary of Representative HRG Equipment

HRG System	Representative HRG Survey Equipment	Operating Frequencies kilohertz (kHz)	Source Level dB_{peak}	Source Level dB_{rms}	Pulse Duration (ms)	Beam Width (degree)
Subsea Positioning/ ultra-short baseline positioning system (USBL) a/	Sonardyne Ranger 2 USBL	35-50	200	188	16	180
Sidescan Sonar a/, b/	Klein 3900 Side Scan Sonar	445 / 900	226	220	0.016 to 0.100	1 to 2

Table 1. Summary of Representative HRG Equipment

HRG System	Representative HRG Survey Equipment	Operating Frequencies kilohertz (kHz)	Source Level dB _{peak}	Source Level dB _{rms}	Pulse Duration (ms)	Beam Width (degree)
Parametric Shallow penetration sub-bottom profiler a/	Innomar parametric SES-2000 Standard	85 to 115	247	241 c/	0.07 to 2	1
Multibeam Echo Sounder a/, b/	Reson T20-P	200/300/400	227	221	2 to 6	1.8 ±0.2
Multi-level Stacked Sparker	Fugro SPR EAH 2D Sparker (700 J)	0.4 to 3.5	223 d/	213d/	0.5 to 3 d/	180
a/ Potential harassment from operation of this device is not anticipated. b/ Operating frequencies are above all relevant marine mammal hearing thresholds. c/ The equipment specification sheets indicate a peak source level of 247 dB re 1 µPA m. The average difference between the peak and SPLRMS source levels for sub-bottom profilers measured by Crocker and Fratantonio (2016) was 6 dB. Therefore, the estimated SPLRMS sound level is 241 dB re 1 µPA m. d/ Sound levels were not available from the manufacturer. Therefore, the source levels and pulse duration are based on data from Crocker and Fratantonio (2016) using the Applied Acoustics Dura-Spark as a comparable proxy. The source levels are based on an energy level of 1,000 J with 240 tips and a bandwidth of 3.2 kHz.						

Mitigation, monitoring, and reporting measures contained within the IHA are described in detail later in this document (please see **Mitigation** and **Monitoring and Reporting** sections).

Comments and Responses

A notice of proposed IHA was published in the **Federal Register** on May 25, 2021 (86 FR 28061). During the 30-day public comment period, NMFS received one comment letter from the Southern Environmental Law Center (SELC), which submitted comments on behalf of Natural Resources Defense Council, National Wildlife Federation, Conservation Law Foundation, Defenders of Wildlife, Whale and Dolphin Conservation, Assateague Coastal Trust, the Nature Conservancy Virginia, North Carolina Wildlife Federation, Sierra Club Virginia Chapter, Surfrider Foundation, All Our Energy, Gotham Whale, International Marine Mammal Project of Earth Island

Institute, Inland Ocean Coalition, Mass Audubon, NY4WHALES, Ocean Conservation Research, Oceanic Preservation Society, and Sanctuary Education Advisory Specialists. NMFS has posted the comment letter online at: www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-otherenergy-activities-renewable. A summary of the comments as well as NMFS' responses are below.

Comment 1: SELC recommends NMFS: 1) fund analyses of recently collected sighting and acoustic data for all data-holders; 2) continue to fund and expand surveys and studies to improve our understanding of distribution and habitat use of marine mammals off North Carolina and Virginia, including within and adjacent to the Project Area, as well as throughout the broader Mid-Atlantic region, in the very near future; and 3) take a "precautionary approach" with regard to siting and mitigation when permitting offshore wind activities in areas for which species distribution data are limited.

Response: NMFS agrees with SELC that continued surveys are warranted as is the analysis of collected data. We welcome the opportunity to participate in fora where implications of such data and development of a dataset would be discussed. Note, however, that NMFS will fund pertinent surveys based on agency priorities and budgetary considerations. Note that NOAA Fisheries recently published "Technical Memorandum NMFS–OPR–64: North Atlantic Right Whale (NARW) Monitoring and Surveillance: Report and Recommendations of the National Marine Fisheries Service's Expert Working Group" (<https://www.fisheries.noaa.gov/resource/document/north-atlantic-right-whalemonitoring-and-surveillance-report-andrecommendations>). This report includes recommendations for a comprehensive monitoring strategy to guide future analyses and data collection. NOAA Fisheries will consider the Expert Working Group's recommendations, as well as other relevant information, in its decision-making about right whale research and population monitoring.

Comment 2: SELC is concerned over use of the Roberts *et al.* 2020 density data to inform take estimates because they claim it excludes data obtained through additional sighting databases, passive acoustic monitoring (PAM), and satellite telemetry. They also contend that the density model uses data primarily from before 2010 and therefore does not reflect shifts in (NARW) distribution observed over the past five years (2017-2021). SELC contends that because the density maps produced by the Roberts *et al.* models do not fully reflect the abundance, distribution, and density of marine mammals for the U.S. East Coast, they cannot be the only information source relied upon when estimating take. They recommend NMFS consider any data from state monitoring efforts, PAM data, opportunistic marine mammal sightings, and other data sources.

Response: Habitat-based density models produced by the Duke University Marine Geospatial Ecology Lab (MGEL) (Roberts *et al.* 2016, 2017, 2018, 2020) represent the best available scientific information concerning marine mammal occurrence within the U.S. Atlantic Ocean. Density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016); more information, including the model results and supplementary information for each of those models, is available at <https://seamap.env.duke.edu/models/Duke/EC/>. These models provided key improvements over previously available information, by incorporating additional aerial and shipboard survey data from NMFS and from other organizations collected over the period 1992-2014, incorporating 60 percent more shipboard and 500 percent more aerial survey hours than did previously available models; controlling for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting; and modeling density from an expanded set of 8 physiographic and 16 dynamic oceanographic and biological covariates. In subsequent years, certain models have been updated on the basis of additional data as well as methodological improvements. In

addition, a new density model for seals was produced as part of the 2017-18 round of model updates.

Of particular note, Roberts *et al.* (2020) further updated density model results for NARWs by incorporating additional sighting data and implementing three major changes: increasing spatial resolution, generating monthly estimates on three time periods of survey data, and dividing the study area into five discrete regions. This most recent update—model version 9 for NARWs—was undertaken with the following objectives (Roberts *et al.*, 2020):

- To account for recent changes to right whale distributions, the model should be based on survey data that extend through 2018, or later if possible. In addition to updates from existing collaborators, data should be solicited from two survey programs not used in prior model versions:
 - Aerial surveys of the Massachusetts and Rhode Island Wind Energy Areas led by New England Aquarium (Kraus *et al.*, 2016), spanning 2011-2015 and 2017-2018.
 - Recent surveys of New York waters, either traditional aerial surveys initiated by the New York State Department of Environmental Conservation in 2017, or digital aerial surveys initiated by the New York State Energy Research and Development Authority in 2016, or both.
- To reflect a view in the right whale research community that spatiotemporal patterns in right whale density changed around the time the species entered a decline in approximately 2010, consider basing the new model only on recent years, including contrasting “before” and “after” models that might illustrate shifts in density, as well as a model spanning both periods, and specifically consider which model would best represent right whale density in the near future.

- To facilitate better application of the model to near-shore management questions, extend the spatial extent of the model farther in-shore, particularly north of New York.
- Increase the resolution of the model beyond 10 kilometers (km), if possible.

All of these objectives were met in developing the most recent update to the density model. The commenters do not cite this most recent report, and the comments suggest that the aforementioned data collected by the New England Aquarium is not reflected in the model. Therefore, it is unclear whether the commenters are aware of the most recently available data, which is used herein.

As noted above, NMFS has determined that the Roberts *et al.* suite of density models represent the best available scientific information, and we specifically note that the 2020 version of the NARW model may address some of the specific concerns provided by the commenters. (Note that there has been an additional minor model update affecting predictions for Cape Cod Bay in the month of December, which is not relevant to the location of this survey off of Delaware and New Jersey.) However, NMFS acknowledges that there will always be additional data that is not reflected in the models and that may inform our analyses, whether because the data were not made available to the model authors or because the data is more recent than the latest model version for a specific taxon. NMFS will review any recommended data sources to evaluate their applicability in a quantitative sense (*e.g.*, to an estimate of take numbers) and, separately, to ensure that relevant information is considered qualitatively when assessing the impacts of the specified activity on the affected species or stocks and their habitat. NMFS will continue to use the best available scientific information, and we welcome future input from interested parties on data sources that may be of use in analyzing the potential

presence and movement patterns of marine mammals, including NARWs, in U.S.

Atlantic waters.

Moreover, data sources cited by SELC pertain to Virginia waters. As described in Kitty Hawk Wind's application and the notice of proposed IHA, none of the sources used in Virginia waters have the potential to harass animals, either because they operate above the hearing ranges of all marine mammals or have such narrow beams widths or low source levels that harassment is unlikely. Therefore, no take in Virginia waters is anticipated to occur as the source with potential to result in harassment, the Furgo sparker, is only used on the WDA off North Carolina.

Finally, as described in the "Estimated Take" section of the notice of proposed IHA and below, Kitty Hawk Wind and NMFS also consider monitoring data collected by Kitty Hawk Wind during previous marine site characterization surveys. Therefore, density estimates alone were not solely used to inform take authorization amounts for all species. As described in the notice of proposed IHA, take was adjusted from the density-based calculations for pilot whales, common dolphins, Atlantic spotted dolphins and Risso's dolphins. In summary, use of the Roberts *et al.* density data in combination of site-specific data collected by Kitty Hawk Wind represents a reasonable approach representing the best available science for estimating take from the proposed marine site characterization surveys.

Comment 3: SELC identifies that the Roberts *et al.* model does not differentiate between species of pilot whale or seal, or between stocks of bottlenose dolphin. They are concerned that the proposed IHA separates marine mammals by species or by stock but the same accounting is used for each, and observations do not distinguish between species or stock. They go on to say that a [negligible impact finding] record that provides "general discussions with little, if any, relevance to the population-level effects on

specific species and stock, and to conclusory statements that no such effects are expected,” is inadequate.

Response: SELC is correct that the Roberts *et al.* density models do not distinguish between stocks of pilot whales and bottlenose dolphins. We note that seal models are not applicable here given the time of year the survey will be conducted and NMFS did not propose, nor authorize, take of any seal species or stock incidental to the proposed marine site characterization survey. The MMPA requires that species- or stock-specific negligible impact determinations be made, and NMFS has done so. In this case, NMFS has authorized take numbers specific to each affected species or stock. As a general matter, NMFS is unaware of any available density data which differentiates between species of pilot whales or seals, or stocks of bottlenose dolphins. However, lack of such data does not preclude the requisite species or stock-specific findings. In the event that an amount of take is authorized at the guild or species level only, *e.g.*, for pilot whales or bottlenose dolphins, respectively, NMFS may adequately evaluate the effects of the activity by conservatively assuming (for example) that all takes authorized for the guild or species would accrue to each potentially affected species or stock. In this case, NMFS made clear why only the offshore stock of bottlenose dolphins is likely to be taken by the proposed marine site characterizations surveys and, for pilot whales, has assigned take on the basis of an assumed group size of 20 for each potentially affected species. NMFS fully describes the reasons why the amount of take authorized, per stock, would have a negligible impact to each marine mammal stock. NMFS has also clarified the total amount of take authorized to each stock of pilot whales (long-finned and short-finned) is 20 each.

Comment 4: SELC believes the assumptions regarding seasonal occurrence of NARW in the survey area are unfounded because they assert NARWs are detected during every month of the year in the Mid-Atlantic.

Response: As described in the notice of proposed IHA, Kitty Hawk Wind plans to complete the surveys by the end of September (we note the IHA is effective until October 31, 2021 in case of unexpected, long weather delays). Of that time, only half of the days would utilize the sparker, the only piece of equipment with potential to harass marine mammals. NMFS does not assert there is zero possibility that NARWs could be encountered but uses the best available science to identify that it is highly unlikely a NARW would be present in the project area (both Virginia and North Carolina) during this time of year and for this short survey. The density estimate considered in estimating take was 0.006 NARWs per 100 km². The resulting take calculation was 0.097, appropriately rounded to zero. In the case that a NARW is encountered, Kitty Hawk Wind is required to implement shut down at 500 m, reduce speeds to 10kts, and maintain a 500 m setback distance to avoid take. Overall, NMFS does not anticipate nor authorize take of NARWs incidental to the survey. To further ensure that take of NARW will not occur, NMFS has limited the effective period of the IHA to a very short duration, expiring on October 31, 2021.

Comment 5: SELC believes NMFS should acknowledge the potential for take by Level A harassment from HRG surveys on small cetaceans and reconsider the analysis of Level A harassment from HRG surveys on harbor porpoises and other acoustically sensitive species.

Response: NMFS disagrees the potential for Level A harassment *i.e.*, permanent threshold shift (PTS) exists from exposure to marine site characterization survey sources for any marine mammal, including high frequency cetaceans (*i.e.*, harbor porpoise). Given the time of year the surveys would occur, harbor porpoise are not normally in the region, let alone in close proximity to survey vessel. The take, by Level B harassment only, of one harbor porpoise is authorized in the IHA as a precautionary measure. Further, as described in the proposed IHA, the risk of any marine mammal incurring

permanent hearing loss is highly unlikely. Kitty Hawk Wind's application identifies conservative calculations to the NMFS thresholds that indicate the potential onset of PTS. These distances are extremely close to the vessel for low and high frequency cetaceans (approximately 18 m and 120 m, respectively). The potential for Level A harassment of mid-frequency cetaceans essentially does not exist as the calculated Level A harassment distance is 0.5 m (based on the SEL threshold; received levels exceeding peak thresholds were not reached at any distance for any hearing group). These distances are conservative as they do not account for the influences of absorption, water depth, and/or beamwidth, all of which can result in smaller harassment radii.

Comment 6: SELC acknowledges that the proposed IHA includes mitigation measures to avoid vessel strikes yet believes NMFS overlooked vessel collisions as a source of potential take and recommends vessel collisions should be incorporated into NMFS' take analysis. SELC identified that vessels associated with the proposed activity will move at speeds well below 10 kts but that NMFS did not address potential vessel strike from vessels transiting to and from the lease area.

Response: As described in the proposed IHA, NMFS does not anticipate vessel strike of any marine mammal would occur incidental to the proposed marine site characterization surveys. Kitty Hawk Wind did not request take from vessel strike nor did NMFS authorize any.

NMFS included a vessel strike analysis in the notice of proposed IHA (86 FR 28061, May 25, 2021) under the **Potential Effects of Specified Activities on Marine Mammals and Their Habitat** section. We identified that at average transit speed for geophysical survey vessels, the probability of serious injury or mortality resulting from a strike is less than 50 percent. However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower speeds during transit. Further, Kitty Hawk Wind is required to implement monitoring and mitigation

measures during transit, including observing for marine mammals and maintaining defined separation distances between the vessel and any marine mammal (see **Mitigation** and **Monitoring and Reporting** sections below). Finally, despite several years of marine site characterization surveys occurring off the U.S. east coast, no vessels supporting offshore wind development have struck a marine mammal either in transit or during surveying. Because vessel strikes are not reasonably expected to occur, no take is authorized. The mitigation measures in the IHA related to vessel strike avoidance are not limited to vessels operating within the WDA or cable corridors and therefore apply to transiting vessels. Although the proposed IHA considered this, the final IHA is more clear in Condition 4(i) that vessel strike avoidance measures apply to vessels during both transit and survey operations phases.

Comment 7: SELC is concerned that avoidance of NARWs in response to survey noise could push NARWs and other large whales out of protected areas and into areas with greater risk of vessel collision, such as shipping lanes entering the Chesapeake Bay; therefore, vessel strike due to displacement should be considered in NMFS' take analysis.

Response: It is unclear what NARW protected areas SELC is referring to given the temporal and spatial aspects of the proposed surveys (e.g., no seasonal management areas (SMAs) are designated in the project area during the survey timeframe). Regardless, we do not anticipate that NARWs would be displaced from Kitty Hawk Wind's proposed marine site characterization surveys. The survey would occur during a time of year when NARW is very low and Kitty Hawk Wind has committed to shutting down and avoiding NARWs in the unlikely scenario a NARW is encountered such that no Level B harassment is anticipated to occur. Further, sources used in the cable corridors are either above marine mammal hearing ranges or have such low source levels and narrow beam widths that harassment, in absence of mitigation, is not anticipated.

Therefore, even if a NARW was in the area of the cable corridor surveys, a displacement impact is not anticipated.

Operation of the sparker in the WDA could lead to some avoidance of marine mammals for which take is authorized (*i.e.*, non-NARWs) from the immediate vicinity of the vessel, but there is no evidence to suggest that animals would be displaced hundreds of miles from the WDA to shipping lanes near the entrance of the Chesapeake Bay. In summary, SELCs concerns do not reflect a likely scenario and NMFS does not anticipate NARWs, or any marine mammal, to be displaced to the degree risk of vessel strike is increased.

Comment 8: SELC considers the renewal process to be inconsistent with the statutory requirements under section 101(a)(5)(D) of the MMPA, including the 30-day public comment requirement.

Response: In prior responses to comments about IHA Renewals (e.g., 84 FR 52464; October 02, 2019 and 85 FR 53342, August 28, 2020), NMFS has explained how the Renewal process, as implemented, is consistent with the statutory requirements contained in section 101(a)(5)(D) of the MMPA, provides additional efficiencies beyond the use of abbreviated notices, and, further, promotes NMFS' goals of improving conservation of marine mammals and increasing efficiency in the MMPA compliance process. Therefore, we intend to continue implementing the Renewal process.

All IHAs issued, whether an initial IHA or a renewal IHA, are valid for a period of not more than one year. And the public has at least 30 days to comment on all proposed IHAs, with a cumulative total of 45 days for IHA renewals. The notice of the proposed IHA published in the **Federal Register** on May 25, 2021 (86 FR 28061) made clear that the agency was seeking comment on both the initial proposed IHA and the potential issuance of a renewal for this project. Because any renewal is limited to another year of identical or nearly identical activities in the same location or the same activities

that were not completed within the effective period of the initial IHA, reviewers have the information needed to effectively comment on both the immediate proposed IHA and a possible 1-year renewal, should the IHA holder choose to request one in the coming months.

While there would be additional documents submitted with a renewal request, for a qualifying renewal these would be limited to documentation that NMFS would make available and use to verify that the activities are identical to those in the initial IHA, are nearly identical such that the changes would have either no effect on impacts to marine mammals or decrease those impacts, or are a subset of activities already analyzed and authorized but not completed under the initial IHA. NMFS would also need to confirm, among other things, that the activities would occur in the same location; involve the same species and stocks; provide for continuation of the same mitigation, monitoring, and reporting requirements; and that no new information has been received that would alter the prior analysis. The renewal request would also contain a preliminary monitoring report, in order to verify that effects from the activities do not indicate impacts of a scale or nature not previously analyzed. The additional 15-day public comment period provides the public an opportunity to review these few documents, provide any additional pertinent information and comment on whether they think the criteria for a renewal have been met. Between the initial 30-day comment period on these same activities and the additional 15 days, the total comment period for a renewal is 45 days.

Comment 9: SELC recommended NMFS impose a seasonal restriction on site characterization activities that have the potential to injure or harass NARWs. SELC identified this seasonal restriction should occur from November 1 through April 30, citing the best available scientific information on the relative density of NARWs in the mid-Atlantic as well as potential presence of pregnant females and mother-calf pairs. SELC further notes that they consider source levels greater than 180 dB re 1 μ Pa (SPL) at

1-meter at frequencies between 7 Hz and 35 kHz to be potentially harmful to low-frequency cetaceans.

Response: As described in the proposed IHA, Kitty Hawk Wind anticipates that the marine site characterization surveys will be complete by September 31, 2021. Kitty Hawk Wind has committed to this and NMFS has limited the effective period of the IHA to October 31, 2021.

It is unclear how the commenters determined that source levels greater than 180 dB re 1 μ Pa (SPL) are potentially harmful to low-frequency cetaceans. NMFS historically applied a received level (not source level) root mean square (rms) threshold of 180 dB SPL as the potential for marine mammals to incur PTS (i.e., Level A (injury) harassment); however, in 2016, NMFS published its *Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing* which updated the 180 dB SPL Level A harassment threshold. Since that time, NMFS has been applying dual threshold criteria based on both peak and a weighted (to account for marine mammal hearing) cumulative sound exposure level. NMFS released a revised version of the Technical Guidance in 2018. We encourage the ENGOs to review the Technical Guidance available at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance> to inform future reviews of any proposed IHA on which they may wish to comment. As described in the Estimated Take section, NMFS has established a PTS (Level A harassment) threshold of 183 dB cumulative SEL for low frequency specialists. Based on a conservative model that does not account for beamwidth and absorption, a NARW would have to come within 17.9 m of the sparker to potentially incur PTS. Not only are NARWs uncommon during the time of year the survey would occur, Kitty Hawk is also required to not approach any NARW within 500 m or operate the sparker within 500 m of a NARW. As such, there is no

potential for a NARW to experience PTS (i.e., Level A harassment) from the proposed survey.

Comment 10: SELC recommends robust and effective real-time monitoring and mitigation systems are in place to protect NARWs throughout the year.

Response: NMFS is generally supportive of this concept. A network of near real-time baleen whale monitoring devices are active or have been tested in portions of New England and Canadian waters. These systems employ various digital acoustic monitoring instruments which have been placed on autonomous platforms including slocum gliders, wave gliders, profiling floats and moored buoys. Systems that have proven to be successful will likely see increased use as operational tools for many whale monitoring and mitigation applications. The ENGOs cited the NMFS publication “Technical Memorandum NMFS-OPR-64: NARW Monitoring and Surveillance: Report and Recommendations of the National Marine Fisheries Service's Expert Working Group” which is available at: <https://www.fisheries.noaa.gov/resource/document/north-atlantic-right-whale-monitoring-and-surveillance-report-and-recommendations>. This report summarizes a workshop NMFS convened to address objectives related to monitoring NARWs and presents the Expert Working Group's recommendations for a comprehensive monitoring strategy to guide future analyses and data collection. Among the numerous recommendations found in the report, the Expert Working Group encouraged the widespread deployment of auto-buoys to provide near real-time detections of NARW calls that visual survey teams can then respond to for collection of identification photographs or biological samples.

Comment 11: SELC recommends that if a survey is shut down during periods of low visibility, including night time, developers should be required to wait until daylight hours and good visibility for surveying to resume.

Response: While we acknowledge the limitations inherent in detection of marine mammals at night, NMFS disagrees with this recommendation. As described in our notice of proposed IHA, the impacts of marine site characterization surveys on marine mammals is relatively low. No auditory injury is expected to result even in the absence of mitigation, given the very small estimated Level A harassment zones (as described in Kitty Hawk Wind's application). Any potential impacts to marine mammals authorized for take would be limited to short-term behavioral responses. Restricting surveys in the manner suggested by the commenters may reduce marine mammal exposures by some degree in the short term, but, this measure would lead to delays in completing the survey which could push the work into times of the year when NARWs are present or more abundant. Furthermore, restricting the applicant to ramp-up only during daylight hours would have the potential to result in lengthy shutdowns of the survey equipment, which could result in the applicant failing to collect the data they have determined is necessary and, subsequently, the need to conduct additional surveys the following year. This would result in significantly increased costs incurred by the applicant. Thus, the restriction suggested by the commenters would not be practicable for the applicant to implement. In consideration of potential effectiveness of the recommended measure and its practicability for the applicant, NMFS has determined that restricting survey start-ups to daylight hours when visibility is unimpeded is not warranted or practicable in this case.

Comment 12: SELC contends the real-time PAM and shutdown on acoustic detections should be required citing that NMFS is relying on visual observation as the primary means of detecting NARWs. SELC believes the effectiveness of detecting marine mammals with thermal and infrared technology is questionable. They acknowledge recent research suggests these tool are effective during calm conditions but state that NMFS should consider limitations of these systems and ensure that the

detection of marine mammals is possible at distances out to and beyond the exclusion zones prior to reliance on this evolving technology.

Response: The foremost concern expressed by the ENGOs in making the recommendation to require use of PAM is with regard to North Atlantic right whales. As described above, the likelihood of a NARW being present within the survey area is extremely low. SELC is requesting extremely costly and time consuming (*i.e.*, impracticable) monitoring and mitigation measures that are not warranted based on the best available science indicating extremely low densities of NARWs during the effective period of the IHA and that the potential severity of impact of the surveys on marine mammals is general considered very low and the survey is very short (12.5 days of sparker use during a time when NARW density is extremely low).

SELC does not explain why they expect that PAM would be effective in detecting vocalizing mysticetes. It is generally well-accepted fact that, even in the absence of additional acoustic sources, using a towed passive acoustic sensor to detect baleen whales (including right whales) is not typically effective because the noise from the vessel, the flow noise, and the cable noise are in the same frequency band and will mask the vast majority of baleen whale calls. Vessels produce low-frequency noise, primarily through propeller cavitation, with main energy in the 5-300 Hertz (Hz) frequency range. Source levels range from about 140 to 195 decibel (dB) re 1 μ Pa (micropascal) at 1 m (NRC, 2003; Hildebrand, 2009), depending on factors such as ship type, load, and speed, and ship hull and propeller design. Studies of vessel noise show that it appears to increase background noise levels in the 71-224 Hz range by 10-13 dB (Hatch *et al.*, 2012; McKenna *et al.*, 2012; Rolland *et al.*, 2012). PAM systems employ hydrophones towed in streamer cables approximately 500 m behind a vessel. Noise from water flow around the cables and from strumming of the cables themselves is also low-frequency and typically masks signals in the same range. Experienced PAM operators participating in a recent

workshop (Thode *et al.*, 2017) emphasized that a PAM operation could easily report no acoustic encounters, depending on species present, simply because background noise levels rendered any acoustic detection impossible. The same workshop report stated that a typical eight-element array towed 500 m behind a vessel could be expected to detect delphinids, sperm whales, and beaked whales at the required range, but not baleen whales, due to expected background noise levels (including seismic noise, vessel noise, and flow noise).

There are several additional reasons why we do not agree that use of PAM is warranted for 24-hour HRG surveys. While NMFS agrees that PAM can be an important tool for augmenting detection capabilities in certain circumstances, its utility in further reducing impact during HRG survey activities is limited. First, for this activity, the area expected to be ensonified above the Level B harassment threshold is relatively small (a maximum of 445 m)—this reflects the fact that, to start with, the source level is comparatively low and the intensity of any resulting impacts would be lower level and, further, it means that inasmuch as PAM will only detect a portion of any animals exposed within a zone, the overall probability of PAM detecting an animal in the harassment zone is low—together these factors support the limited value of PAM for use in reducing take with smaller zones. PAM is only capable of detecting animals that are actively vocalizing, while many marine mammal species vocalize infrequently or during certain activities, which means that only a subset of the animals within the range of the PAM would be detected (and potentially have reduced impacts). Additionally, localization and range detection can be challenging under certain scenarios. For example, odontocetes are fast moving and often travel in large or dispersed groups which makes localization difficult.

Given that the effects to marine mammals from the types of surveys authorized in this IHA are expected to be limited to low level behavioral harassment even in the

absence of mitigation, the limited additional benefit anticipated by adding this detection method (especially for right whales and other low frequency cetaceans, species for which PAM has limited efficacy), and the cost and impracticability of implementing a full-time PAM program, we have determined the current requirements for visual monitoring are sufficient to ensure the least practicable adverse impact on the affected species or stocks and their habitat.

Comment 13: SELC requests NMFS encourage Kitty Hawk Wind to collaborate with scientists in collecting data that would increase the understanding of the effectiveness of night vision and infrared technologies off North Carolina, Virginia and the broader Mid-Atlantic region with a view towards utilizing these technologies to commence surveys at night in the future.

Response: NMFS agrees collaboration with scientists to improve the understanding of the effectiveness of night vision and infrared technologies for all offshore wind development and will encourage Kitty Hawk Wind to do so.

Comment 14: SELC believes the shutdown zones established for vessels operating a sparker should be applied to all vessels using equipment that operate below 180 kHz because they claim such sources have the potential to cause acoustic harassment of marine mammals.

Response: NMFS disagrees that all sources below 180 kHz have the potential to cause harassment and; therefore, shutdown is necessary for all equipment operating below 180 kHz. SELC's recommendation does not consider fundamental acoustic propagation or consider source operating characteristics such as beam width. The Innomar and USBL are non-impulsive, non-parametric sound sources. The Innomar's beam width is 1 degree meaning a marine mammal would have to be in a particular part of the water column very close to the source (essentially under the vessel) to experience sounds loud enough to experience harassment. The incredibly short duration of that

exposure based on a moving animal and moving source does not warrant a shutdown as harassment is not a likely outcome of exposure.

Comment 15: SELC believes the proposed exclusion zone sizes are inconsistent with those required for similar activities in other IHAs. They cite the previous IHA for HRG surveys in the Kitty Hawk Lease Area, wherein NMFS required a 200-meter exclusion zone for all large whales, pilot whales, and Risso's dolphins, and question why deviations from the 200-m exclusion zone were made. SELC recommends a clearance zone of 500 m for all marine mammals and, to the extent feasible, a 1,000-m exclusion zone for NARWs.

Response: NMFS disagrees with this recommendation and has determined that the exclusion zones included here are sufficiently protective. First, we note SELC is incorrect that the previous IHA required a 200 m exclusion zone for all large whales, pilot whales, and Risso's dolphin. The actual exclusion zones in that referenced IHA (both proposed and final) were 500-m for NARWs, 200- m for sei and fin whales, and 100-m for all other large cetaceans (humpback whale, minke whale, pilot whale, Risso's dolphin). Here, Kitty Hawk Wind must implement a 500-m exclusion zone for all ESA-listed whales (i.e., the same exclusion zone for NARWs and a larger exclusion zone for fin and sei whales). The final IHA also increases the exclusion zone from proposed to final such that the final exclusion zone is 100 m. Therefore, while there is inconsistency, the IHA includes more protective measures for marine mammals than the previous IHA. We note that the 500-m exclusion zone for NARWs exceeds the modeled distance to the largest Level B harassment isopleth distance (445 m). The commenters do not provide any justification for the contention that the existing exclusion zones are insufficient, and do not provide any rationale for their recommended alternatives (other than that they are larger). In summary, SELC's recommendation that the exclusion zone be increased to 500-m for all marine mammals (except NARWs) and 1,000-m for NARW is unsupported

and does not consider the negative operational impacts of such a recommendation. NMFS believes more frequent shutdowns due to these measures would unnecessarily increase survey duration, potentially pushing the project into times when NARWs are more likely to be present.

Comment 16: SELC recommended that a combination of visual monitoring—by four protected species observers adhering to “two-on/two-off” schedule—and PAM should be used at all times that survey work is underway, and, for efforts that continue into the nighttime, night vision or infrared technology should also be used.

Response: NMFS typically requires that a single protected species observer (PSO) must be stationed at the highest vantage point and engaged in general 360-degree scanning during daylight hours only. Although NMFS acknowledges that the single PSO cannot reasonably maintain observation of the entire 360-degree area around the vessel, it is reasonable to assume that the single PSO engaged in continual scanning of such a small area (*i.e.*, 500- m EZ, which is greater than the maximum 141-m harassment zone) will be successful in detecting marine mammals that are available for detection at the surface. The monitoring reports submitted to NMFS have demonstrated that PSOs active only during daylight operations are able to detect marine mammals and implement appropriate mitigation measures. Kitty Hawk Wind proposed using two PSOs and night vision/infrared technology during nighttime operations. This was included in their application and the proposed IHA made available for public comment; therefore, the portion of the comment related to using night vision technology has been satisfied. Regarding PAM, we refer to our response to Comment 12 in that use of PAM is not warranted given the very low level of impact from the survey should a marine mammal be exposed to sparker use and the impracticability of implementing PAM during the very short survey.

Comment 17: SELC does not agree with the proposal to waive the shutdown requirement for certain species of small delphinid. They are particularly concerned that this exemption will leave the two stocks of bottlenose dolphin, which are designated as depleted and/or strategic under the MMPA, without adequate shutdown protections and therefore NMFS should remove all stocks of bottlenose dolphin from this exemption.

Response: The only stock likely to be present within the WDA during use of the sparker, and for which take is authorized, is the offshore stock of bottlenose dolphins. This stock is not a depleted or strategic stock. While the northern and southern migratory coastal stocks are depleted and strategic, they are likely to be found within the transit corridor where the Furgo sparker is not used. As previously described, the sources used in the transit corridor operate about 180 kHz (outside of marine mammal hearing) or do not have the potential to result in harassment due to their operating characteristics (*e.g.*, very narrow beam width). Therefore, NMFS retained the shutdown requirement as proposed.

Comment 18: SELC recommends a mandatory speed restriction of 10 kts for all project vessels within any designated dynamic management area (DMA) for NARWs.

Response: The measure that all vessels traveling within a DMA was included as condition 4(i)(i) of the proposed IHA that was made available for public comment. The condition that all project vessels (while in transit or during active surveying) travel at 10 kts or less in both a DMA and an acoustically-triggered Slow Zone is included in the final IHA. However, we note that given the location and time of year surveys will occur, it is unlikely a DMA or acoustically-triggered slow zone would be established.

Comment 19: SELC believes a sighting of three or more NARWs is too high of a bar to trigger a DMA and recommends NMFS expand the DMA requirement to include sightings of mother-calf pairs.

Response: DMAs are a component of the 2008 *Final Rule To Implement Speed Restrictions to Reduce the Threat of Ship Collisions With NARWs* (73 FR 60173, October

10, 2008). The rule was promulgated to minimize lethal ship strikes of NARWs and based on the best available science. DMAs are triggered based on the analysis and findings of Clapham and Pace (2001). Any changes to the DMA program regarding modifying the triggering of a DMA is outside the scope of the proposed IHA to Kitty Hawk Wind. We note that despite being established alongside NOAA's mandatory vessel speed regulations in Seasonal Management Areas in 2008, the DMA program is voluntary for the general public. However, as described in the IHA, Kitty Hawk Wind is required to reduce vessel speeds to 10 kts should a NARW mother/calf pair be observed.

Comment 20: SELC requests PAM should be employed in all transit lanes to supplement the efforts of observers in visually detecting marine mammals.

Response: As noted in our response to Comment 12, SELC is requesting costly monitoring be employed that is not warranted and is impracticable for the applicant to implement. Despite years of effort, no marine site characterization vessels in the U.S., either in transit or during active surveying and which operate under PSO requirements as the ones included in the IHA, have never struck a marine mammal. NMFS is also unaware of any marine site characterization vessel strikes in Europe. The vessels involved will work 24-hrs per day; therefore, transit time is very limited to essentially to and from the WDA upon onset and completion of the survey with some limited potential for transit to sheltered waters in the case of foul weather.

Changes from Proposed IHA to Final IHA

The effective period of the IHA is now limited to July 15, 2021 through October 31, 2021 to ensure no take of NARWs. We have also increased the clearance zone for all Endangered Species Act (ESA)-listed marine mammals (not just NARWs) to 500 m; increased the vessel separation distance for all ESA-listed marine mammals during both surveying and transit to 500 m; and included a 10 knot speed restriction for vessels

traveling in an acoustically-triggered slow zone (the proposed IHA contained a 10 knot speed restriction for dynamic management areas (DMAs) only).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs;

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website

(<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species or stocks that may occur within the survey area and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic and Gulf of Mexico SARs (*e.g.*, Hayes *et al.*, 2019, 2020). All values presented in Table 2 are the most recent available at the time

of publication and are available in the 2019 SARs and draft 2020 SARs (available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports>).

Table 2. Summary Information of Species within the Proposed Survey Area

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale	<i>Eubalaena glacialis</i>	Western North Atlantic	E/D; Y	368 (-; 356; 2020) ⁴	0.8	18.6
Family Balaenopteridae (rorquals)						
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/-; Y	1,393 (0; 1,375; 2016)	22	58
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	E/D; Y	6,802 (0.24; 5,573; 2016)	11	2.35
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E/D; Y	6,292 (1.02; 3,098; 2016)	6.2	1.2
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coast	-/-; N	21,968 (0.31; 17,002; 2016)	170	10.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale	<i>Physeter macrocephalus</i>	NA	E; Y	4,349 (0.28; 3,451; See SAR)	3.9	0
Family Delphinidae						
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic	-/-; N	39,215 (0.30; 30,627; See SAR)	306	21
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Atlantic	-/-; Y	28,924 (0.24; 23,637; 2016)	236	160
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Offshore	-/-; N	62,851 (0.23; 51,914, 2016)	519	28

		W.N.A. Northern Migratory Coastal	-/-;Y	6,639 (0.41, 4,759, 2016)	48	12.2- 21.5
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	-/-; N	172,947 (0.21; 145,216; 2016)	1,452	399
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic	-/-; N	39,921 (0.27; 32,032; 2012)	320	0
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic	-/-; N	35,493 (0.19; 30,289; 2016)	303	54.3
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-/-; N	95,543 (0.31; 74,034; 2016)	851	217
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	-/-; N	75,834 (0.15; 66,884, 2018)	2,006	350
<p>¹ ESA status: Endangered (E), Threatened (T) / MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.</p> <p>² NMFS marine mammal stock assessment reports online at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.</p> <p>³ These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.</p> <p>⁴ Pace <i>et al</i> 2021.</p>						

All species that could potentially occur in the proposed survey areas are included in Table 2. While NARWs, sei and sperm whales, and harbor seals have been sighted within the survey area, the temporal occurrence of the surveys (summer/early fall) does not overlap with the time of year these species may be present in the survey area as most of these species are in northern latitudes during this time. For these reasons, along with

the very short duration of the survey, we consider the potential for take of these species *de minimus* and they will not be discussed further.

In addition to what is included in Sections 3 and 4 of the application, the SARs, and NMFS' website, further detail informing the baseline for select species (e.g., information regarding current Unusual Mortality Events (UME) and important habitat areas) was provided in the notice of proposed IHA (86 FR 28061; May 25, 2021) and is not repeated here. No new information is available since publication of that notice.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (e.g., Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 dB threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3. Marine Mammal Hearing Groups (NMFS, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite (<i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Nine marine mammal species (all cetaceans) have the reasonable potential to be taken by the survey activities (Table 5). Of the cetacean species that may be present, three are classified as low-frequency cetaceans (*i.e.*, all mysticete species), five are classified as mid-frequency cetaceans (*i.e.*, all delphinid species), and one is classified as a high-frequency cetacean (*i.e.*, harbor porpoise).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The notice of proposed IHA included a summary of the ways that Kitty Hawk Wind's specified activity may impact marine mammals and their habitat (86 FR 28061; May 25, 2021). In summary, the potential effects of Kitty Hawk Wind's specified survey activity are expected to be limited to Level B harassment of select marine mammal

species. No permanent or temporary auditory effects, or significant impacts to marine mammal habitat, including prey, are expected. No new information is available that would change our previous analysis; therefore, we refer the reader to the aforementioned notice of proposed IHA rather than repeating the details here. The **Estimated Take** section includes a quantitative analysis of the number of individuals that are expected to be taken by Kitty Hawk Wind's activity. The **Negligible Impact Analysis and Determination** section considers the potential effects of the specified activity, the **Estimated Take** section, and the **Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through the IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes are by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to noise from certain HRG acoustic sources. Based primarily on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither

anticipated (even absent mitigation), nor authorized. Consideration of the anticipated effectiveness of the mitigation measures (*i.e.*, exclusion zones and shutdown measures), discussed in detail below in the **Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described previously, no serious injury or mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to

predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 μ Pa (rms) for the impulsive sources (*i.e.*, sparkers) evaluated here for Kitty Hawk Wind's proposed activity.

Level A Harassment – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS' 2018 Technical Guidance, which may be accessed at www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.

Kitty Hawk Wind's proposed activity includes the use of impulsive (*i.e.*, sparkers) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see Kitty Hawk Wind's application for details of a quantitative exposure analysis exercise, *i.e.*, calculated Level A harassment isopleths and estimated Level A harassment exposures. Maximum estimated Level A harassment isopleths ranged from 0 to 2 m for all sources and hearing groups with the exception of the Furgo 2D Sparker). The Level A harassment isopleth for low frequency, mid-frequency, and high frequency cetaceans was 18, 0.5, and 120.5 m, respectively and 10 m

for phocids. Kitty Hawk Wind did not request authorization of take by Level A harassment, and we did not authorize Level A harassment in the IHA.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The Fugro SPR EAH 2D sparker is the only source with the potential to result in marine mammal harassment; therefore, the 160 dB_{rms} isopleth resulting from this source is applied in ensonified area calculations. As noted previously, Kitty Hawk Wind intends to survey a total track-line distance of 3,300 km over the course of 25 days. It is estimated that the sparker will be in operation for approximately 50 percent of this duration. During the remainder of survey days, only sources not expected to have the potential to result in take of marine mammals would be used. To be conservative, the sparker has been assigned a duration of 13 days (instead of 12.5 days). The distance to the 160 dB_{rms} Level B harassment isopleth is calculated using the conservative practical spreading model and a source level of 213dB_{rms} (Table 1). The resulting isopleth is 445 m.

Kitty Hawk then considered track line coverage and isopleth distance to estimate the maximum ensonified area over a 24-hr period, also referred to as the zone of influence (ZOI). The estimated distance of the daily vessel track line was determined using the estimated average speed of the vessel (3 knots [5.6 km/hr]) over a 24-hr operational period for a total daily track line coverage of 134.4 km. The ZOI was calculated by squaring the respective maximum distance to the Level B harassment threshold (445 m) and multiplying by the estimated daily vessel track line distance of approximately 134.4 km to obtain the area of a box (118.7km²). Then the ensonified area

around the vessel at any given point (0.63) was added to that area to account for ½ of a circle at each end of the box. The resulting ZOI is 119.3km² (Table 4).

The ZOI is a representation of the maximum extent of the ensonified area around a sound source over a 24-hr period. The ZOI was calculated per the following formula:

$$\text{ZOI} = (\text{Distance/day} \times 2r) + \pi r^2$$

Table 4. Ensonified Area During Sparker Use

Survey Equipment	Number of Active Survey Days a/	Estimated Total Line Distance (km)	Estimated Distance per Day (km)	ZOI per Day (km ²)
Fugro SPR EAH 2D Sparker	13	1,700	133.4	119.3

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018, 2020) represent the best available information regarding marine mammal densities in the survey area. The density data presented by Roberts *et al.* (2016, 2017, 2018, 2020) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at

<https://seamap.env.duke.edu/models/Duke/EC/>. Marine mammal density estimates in the survey area (animals/km²) were obtained using the most recent model results for all taxa

(Roberts *et al.*, 2016, 2017, 2018, 2020). The updated models incorporate additional sighting data, including sightings from NOAA's Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

Monthly density grids (*e.g.* rasters) for each species were overlain with the Survey Area and values from all grid cells that overlapped the Survey Area were averaged to determine monthly mean density values for each species. Monthly mean density values within the Survey Area were averaged by season (Winter [December, January, February], Spring [March, April, May], Summer [June, July, August], Fall [September, October, November]) to provide seasonal density estimates. Since the HRG surveys would only occur during summer and fall, only those values were used in the take estimation analysis. Within each survey segment (Wind Development Area and offshore export cable corridor), the highest seasonal density estimates during the duration of the proposed survey were used to estimate take.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

For most species, the authorized take amount is equal to the calculated take amount resulting from the following equation: $D \times ZOI \times 13 \text{ days}$. We note the densities provided in Table 5 represent the number of animals/100 km; therefore, the density is normalized to 1km in the equation. However, for some species, this equation does not reflect those species that can travel in large groups- an important parameter to consider that is not captured by density values. The equation also does not capture the propensity of some delphinid species to be attracted to the vessel and bowride. Therefore, to account for these real-world situations, the authorized take is a product of group size. For large groups of spotted and short beaked common dolphins knowing their affinity for bow riding (and therefore coming very close to the vessel), Kitty Hawk Wind assumed

one group could be taken each day of sparker operations (13 days). Based on previous survey data, as described in previous monitoring reports, Kitty Hawk Wind assumes an average group size for spotted dolphins is 16 in the survey area. For common dolphins, the overall average reported group size was 4 in all survey areas but the average group size during the geotechnical surveys was 17 individuals. Therefore, in this case, Kitty Hawk Wind assumed a group of 17 common dolphins could be taken on any given day of sparker operation. For Risso's dolphin and pilot whales, one group is anticipated to be taken over the 13 days of sparker operations. Average group size for these species are 25 and 20, respectively (Reeves *et al.* 2002). Take for all other species is a reflection of the calculated take. Given the timing and location of the surveys, Kitty Hawk Wind is not requesting, nor are we proposing to authorize, take of NARWs or sei whales. Table 5 provides the amount of take authorized in the IHA.

Table 5. Marine Mammal Density and Take Estimates

Species	Stock	Max Avg Seasonal Density (animals/100km ²) ¹	Calculated Take	Authorized Take	Percent of Population
Humpback whale	Gulf of Maine	0.084	1.297	1	<1
Fin whale	Western North Atlantic	0.171	2.648	3	<1
Minke whale	Canadian East Coast	0.105	1.634	2	<1
Pilot whales	Western North Atlantic	0.073	1.139	20 ³	<1
Harbor porpoise	Gulf of Maine/Bay of Fundy	0.033	0.510	1	<1
Bottlenose dolphin ²	Western North Atlantic, offshore	7.913	122.725	123	<1
Common dolphin	Western North Atlantic	1.583	24.555	221 ⁴	<1
Atlantic spotted dolphin	Western North Atlantic	7.669	118.937	208 ⁴	<1
Risso's dolphin	Western North Atlantic	0.058	0.893	25 ⁴	<1
¹ Density values from Duke University (Roberts <i>et al.</i> 2016b, 2017, 2018, 2020).					

² Estimates based on bottlenose dolphin stock preferred water depths (Reeves *et al.* 2002; Waring *et al.* 2016).

³ Roberts (2018) only provides density estimates for “generic” pilot whales and seals; therefore, an equal potential for takes has been assumed either for species or stocks within the larger group. The take adjusted from calculated value to account for encountering one group over the course of the 13 days of sparker use.

⁴ Take adjusted from calculated take to account for encountering one group on each of the 13 days of sparker use.

Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

Mitigation for Marine Mammals and their Habitat

NMFS proposes that the following mitigation measures be implemented during Kitty Hawk Wind's planned marine site characterization surveys.

Marine Mammal Shutdown Zones

An immediate shutdown of the Sparker would be required if a marine mammal is sighted entering or within its respective exclusion zone (Table 6). The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed (*i.e.*, 30 minutes for all other species). Table 6 provides the required shutdown zones.

Table 6. Shutdown Zones During Sparker Use

Species	Shutdown Zone (m)
ESA-listed marine mammals	500
Non-ESA marine mammals ¹	100
¹ If a delphinid from specified genera is visually detected approaching the vessel (<i>i.e.</i> , to bow ride) or towed equipment, shutdown is not required.	

Pre-Clearance of the Shutdown Zones

Kitty Hawk Wind would implement a 30-minute pre-clearance period of the shutdown zones prior to the initiation of ramp-up of HRG equipment. During this period, the exclusion zone will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective shutdown zone. If a marine mammal is observed within the shutdown zone during the pre-clearance period, ramp-up may not begin until the animal(s) has been

observed exiting its respective shutdown zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes, and 30 minutes for all other species). Kitty Hawk Wind must clear an area of 500 m for all ESA-listed marine mammals and 100 m for all other marine mammals around the sparker prior to commencing a survey (or when a break in operation greater than 30 minutes occurs).

Shutdown Procedures

The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective shutdown zone or the relevant time period has lapsed without re-detection (15 minutes for small odontocetes and seals, and 30 minutes for all other species).

The shutdown requirement would be waived for small delphinids of the following genera: *Delphinus*, *Stenella* (*frontalis* only), and *Tursiops*. Specifically, if a delphinid from the specified genera is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid detected in the exclusion zone and belongs to a genus other than those specified.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again only if the PSOs have maintained constant observation and the shutdown zone is clear of marine mammals. If the source is turned off for more than 30 minutes, it may only be restarted after PSOs have cleared the shutdown zones for 30 minutes.

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (445 m), shutdown would be required.

Ramp-Up

The Fugro SPR EAH 2D Sparker operates on a binary on/off switch and thus ramp-up is not technically feasible for this piece of equipment.

Vessel Strike Avoidance

Kitty Hawk Wind will ensure that vessel operators and crew maintain a vigilant watch for marine mammals and slow down or stop their vessels to avoid striking these species. All personnel responsible for navigation and marine mammal observation duties will receive site-specific training on marine mammals sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures would include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;

- All vessels (*e.g.*, source vessels, chase vessels, supply vessels), regardless of size, must observe a 10-knot speed restriction in the unlikely scenario a NARW dynamic management area (DMA) is in effect;
- All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel underway;
- All vessels must maintain a minimum separation distance of 500 m from all ESA-listed marine mammals. If a whale is observed but cannot be confirmed as a species other than an ESA-listed whale, the vessel operator must assume that it is an ESA-listed whale and take appropriate action;
- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 100 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel);
- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained; and
- These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to

implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of Kitty Hawk Wind's proposed measures, NMFS has determined that the mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the planned action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of

marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);

- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Kitty Hawk Wind would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including exclusion zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established exclusion zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are

necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without

use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team.

Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Daly@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;

- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;
- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.).

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial sighting;

- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other); and
- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

Although not anticipated, if a NARW is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Kitty Hawk Wind must immediately report sighting information to the NMFS NARW Sighting Advisory System: (866) 755-6622. NARW sightings in any location must also be reported to the U.S. Coast Guard via channel 16.

In the event that Kitty Hawk Wind personnel discover an injured or dead marine mammal, Kitty Hawk Wind would report the incident to the NMFS Office of Protected

Resources (OPR) and the NMFS Southeast Marine Mammal Stranding Network within 24 hours. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Kitty Hawk Wind would report the incident to the NMFS OPR and the NMFS Southeast Marine Mammal Stranding Network within 24 hours. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- Estimated size and length of animal that was struck;

- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’s implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 5, given that NMFS expects the anticipated effects of the planned survey to be similar in nature. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described previously due to the nature of the operations, Level A harassment is not expected even in the absence of mitigation. The small size of the Level A harassment zones and the required shutdown zones for certain activities further bolster this conclusion. In addition to being temporary, the maximum expected Level B harassment zone around a survey vessel is 445 m, producing expected effects of particularly low severity. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they

utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations. There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the planned survey area at the time of survey (the biologically important area (BIA) for NARWs is for a time period outside the proposed survey time period) and there are no primary feeding areas known to be biologically important to marine mammals within the planned survey area. In addition, there is no designated critical habitat for any ESA-listed marine mammals in the planned survey area.

NMFS expects that takes would be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures (*e.g.*, shutdown) would further reduce exposure to sound that could result in more severe behavioral harassment. In summary, and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or proposed to be authorized;
- Take is anticipated to be primarily Level B behavioral harassment consisting of brief startling reactions and/or temporary avoidance of the survey area and could occur over a very short time period (13 days);

- No areas of particular importance to marine mammals (*e.g.*, BIA, critical habitat) occur within the survey area; and
- Impacts on marine mammal habitat and species that serve as prey species for marine mammals are expected to be minimal and the alternate areas of similar habitat value for marine mammals are readily available.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities. For this IHA, take of all species or stocks is below one third of the estimated stock abundance (in fact, take of individuals is less than 7 percent of the abundance for all affected stocks).

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine

mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

On June 29, 2021, NMFS Greater Atlantic Regional Fisheries Office (GARFO) completed programmatic consultation pursuant to section 7 of the ESA concerning the effects of certain site assessment and site characterization activities to be carried out to support the siting of offshore wind energy development projects off the U.S. Atlantic coast. The consultation concluded that marine site assessment surveys, such as those proposed by Kitty Hawk Wind, may affect but are not likely to adversely affect, ESA-listed marine mammals provided the project design criteria and best management practices identified in that consultation are followed. The scope of Kitty Hawk Wind's surveys fall within the scope of the activities analyzed in that consultation and NMFS has included a provision in the IHA that all consultation project design criteria (PDCs) and best management practices (BMPs) be adhered to. Consideration of potential issuance of

IHA by NMFS OPR for Survey Activities was also included; therefore, NMFS action of issuing an IHA to Kitty Hawk Wind is covered by the 2021 programmatic consultation.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NAO 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Authorization

NMFS has issued an IHA to Kitty Hawk Wind for the potential harassment of small numbers of nine species marine mammal species incidental to conducting marine site characterization surveys offshore of Virginia and North Carolina provided the mitigation, monitoring and reporting requirements contained within the IHA are followed.

Dated: July 27, 2021.

Angela Somma,

Acting Director, Office of Protected Resources,

National Marine Fisheries Service.